

(12) **United States Patent**
Dervish et al.

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(54) **SOLE OR INNER SOLE**

(56) **References Cited**

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U.S. PATENT DOCUMENTS

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4,745,930 A * 5/1988 Confer A43B 3/0005 600/592
5,929,332 A * 7/1999 Brown A43B 3/00 36/136

(Continued)

FOREIGN PATENT DOCUMENTS

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DE 10201134 A1 7/2003
DE 102012004117 A1 9/2013
WO 2017/033036 A1 3/2017

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OTHER PUBLICATIONS

Intellectual Property Office (the United Kingdom), Search Report issued in corresponding Application No. GB1710445.6, dated Nov. 30, 2017.

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(57) **ABSTRACT**

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A sole (100) or inner sole for a shoe is provided. The sole (100) or inner sole comprises: a toe region (28) for supporting a user's toes; a forefoot region (26) for supporting a user's forefoot; a midfoot region (24) for supporting a user's arch; and a heel region (22) for supporting a user's heel. A longitudinal direction (X) extends from the heel region (22) towards the toe region (28). A lateral direction (Y) transverse to the longitudinal direction (X) extends from an inner side to an outer side of the sole (100) or inner sole. A plurality of force sensors (10) distributed throughout the sole (100) or inner sole. The plurality of force sensors (10) comprise: a first lateral row of force sensors (10) in the toe region (28); a second lateral row of force sensors (10) in the forefoot region (26); a first longitudinal row of force sensors (10) along the inner side of the sole (100) or inner sole from the heel region (22) to the midfoot region (24); and a second longitudinal row of force sensors (10) along the outer side of

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